

## **ITEM #0703031A – ROCK WEIR**

### **Description:**

Work under this item shall consist of installing rock weirs on channel bed or articulated concrete blocks in the river or streambed to improve/create aquatic habitat by enhancing flow diversity through the formation of scour pools. This work shall be done in accordance with the dimension and details shown on the plans, at locations indicated on the plans or as directed by personnel from the Office of Environmental Planning (OEP) or an approved representative.

### **Materials:**

The rock size material for this item shall have a minimum median diameter of 2 feet and weigh a minimum of 160 pounds. It must be large enough to achieve the desired height when partially buried in the river or streambed and conform to the hardness standards of Section M.12.02.

Rock excavated from ledge (bedrock) formations, or broken from larger boulders, will not be accepted. Broken concrete will not be accepted.

Material the Contractor proposes to bring to the site must be inspected and approved by the OEP at the source prior to the excavation or hauling of the material. A minimum notice of 2 weeks must be given to the OEP for inspection and approval.

### **Construction Methods:**

Prior to installation, the Contractor shall stake out the location of the rock weir, by placing stakes at each end and shall notify the Engineer in the field for review. Final location will be at the discretion of OEP or approved representative.

All erosion and sedimentation control devices, including dewatering basins, shall be implemented prior to beginning the installation of rock weirs.

Notify the OEP at least 2 weeks prior to initiating the placement of rock weirs. Any and all coordination with the Department of Energy and Environmental Protection (DEEP) will be done through the OEP. The Contractor shall react accordingly to this requirement by giving the Engineer sufficient time to fulfill the Engineer's obligation. Placement of the rock weir should proceed during periods of low flow to ensure proper placement and as directed by the OEP or an approved representative. No work shall be performed without a DEEP representative on site, unless specifically requested otherwise.

### **Primary Criteria:**

1. Shape and orientation: Rock weirs shall be in the shape of a modified horseshoe such that the apex of the structure points upstream. The angle the arms make with the upstream bank should be approximately 20 to 30 degrees, so that flows are directed away from the banks and deeper pools are created directly downstream of the rock weir.

2. Height: The rocks shall be placed over excavated channel bed or articulated concrete blocks as shown on the plans or as directed by the OEP or approved representative. The rocks shall be buried in the streambed a minimum of 6 inches. When rocks need to be buried on top of articulate concrete block, a minimum of 18 inches of streambed material is required. The top elevation of the center rocks at the apex of the weir shall be at or near bed level to permit fish passage at low flows while the end rocks on either bank shall be at the bankfull level.
3. When installing the weirs, the bank end of the structure should be firmly anchored with a minimum of 2 rocks embedded into the bank.
4. The rocks should be spaced  $\frac{1}{3}$  to  $\frac{1}{2}$  the rock diameter apart with the exception of the end rocks. End rocks should be buried partially in the stream bank and should touch the adjoining rocks.
5. Equipment: When placing and maneuvering rocks within the channel or embedding rocks into the bank, the Contractor shall use an excavator with an articulated bucket (with thumb). Any other equipment proposed to be used shall be reviewed and approved in advance by OEP or an approved representative.
6. All disturbed areas shall be permanently stabilized using approved sediment and erosion control measures:

**Method of Measurement:**

This work will be measured for payment for each Rock Weir installed and accepted at the locations called for on the plans or as directed by OEP or approved representative, within the limits of the proposed work.

**Basis of Payment:** This work will be paid for at the contract unit price each for "Rock Weir", completed and accepted. This price shall include all materials, equipment, tools and labor incidental to the installation of each rock weir. Channel diversion and dewatering shall be paid under item "Handling Water". Excavation of the channel bed will be paid under the item "Channel Excavation-Earth".

**Pay Item**  
Rock Weir

**Pay Unit**  
EA.